

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

LAND SMOOTHING

(Ac.)

CODE 466

DEFINITION

Land smoothing is removing irregularities on the land surface.

PURPOSE

Land smoothing improves surface drainage, provides for more uniform cultivation, and improves equipment operation and efficiency.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies on areas where depressions, mounds, old terraces, turn-rows, and other surface irregularities interfere with the application of needed soil and water conservation and management practices.

Land smoothing is limited to areas having adequate soil depth or where topsoil can be salvaged and replaced.

Land smoothing does not apply to the regular maintenance on irrigated land or on land that has been modified using practice standards Precision Land Forming (462) or Irrigation Land Leveling (464).

CRITERIA

General Criteria Applicable To All Purposes

The extent of rough grading required and tolerances of the finished smoothing job shall be in keeping with the requirements of the planned cropping system.

Construction operations shall be carried out in such a manner that erosion and air and water pollution are minimized.

Smooth irregularities to the degree required for the planned use.

The land to be smoothed shall be cleared of vegetative matter and trash.

Additional Criteria Applicable to Removing Old Terraces

Old terraces shall be removed if:

- new terraces will not function properly due to the existence of old terraces,
- old terraces will cause erosion or drainage problems in the field,
- old terraces will concentrate flows into portions of a new terrace system,
- old terraces exceed current spacing limits or current channel grade criteria, or lack a stable outlet, or
- old terraces are no longer needed or no longer meet their intended purpose.

Other justifications for removing terraces beyond that listed above must be approved by an engineer. Removal shall be in accordance with this standard.

When a new terrace system will replace an old terrace system, the old terraces shall be removed prior to or in conjunction with the installation of the new terrace system.

Old terraces replaced with cropland diversions shall be removed if any of the above criteria applies.

Proper planning procedures shall be utilized when removing old terraces in non-cropland areas to minimize erosion problems prior to establishment of vegetation. This may include staggered removals or vegetating between terraces prior to removal. Disturbed areas shall be revegetated or otherwise protected from erosion, as soon as possible after construction. Refer to Oklahoma NRCS Conservation

Practice Standard, Critical Area Planting (342) for seedbed preparation, seeding, fertilizing, and mulching requirements.

CONSIDERATIONS

Where possible, the ground surface should be plowed or disked prior to smoothing.

Consider the effects on the water budget, especially on volumes and rates of runoff, infiltration, and evaporation.

Effect on erosion and the movement of sediment and soluble substances attached to sediment carried by runoff should be minimized.

Potential for earth moving to uncover or redistribute toxic materials, such as saline soils should be addressed.

Consider the effects on wetland hydrology and/or wetland wildlife habitat.

Address potential impacts to existing utilities by locating and avoiding all utilities.

Consider the effects on soil loss due to increased wind erosion potential and subsequent deposition.

Ensure that cultural resources, inventory and assessment have been completed prior to movement of soil.

PLANS AND SPECIFICATIONS

Plans and specifications for land smoothing shall be in keeping with this standard and shall describe the requirement for applying the practice to achieve its intended purpose. Plans and specifications must include construction

plans, drawings, job sheets or other similar documents. These documents must specify the requirements for installing the practice.

OPERATION AND MAINTENANCE

An Operation and Maintenance (O&M) plan must be prepared for and reviewed with the landowner or operator. Actions shall be carried out to insure that this practice functions as intended. Such actions shall include performing maintenance when needed to insure that surface irregularities are maintained at the degree of smoothness required. The plan must specify that the treated areas and associated practices are inspected annually and after significant storm events to identify repair and maintenance needs.

REFERENCES

U.S. Department of Agriculture, Natural Resources Conservation Service, 2009. Engineering Field Handbook, Chapter 1. Surveying. National Engineering Handbook, Part 650.01, Washington, DC.

U.S. Department of Agriculture, Natural Resources Conservation Service, 1990. Engineering Field Handbook, Chapter 4. Elementary Soils Engineering. National Engineering Handbook, Part 650.04, Washington, DC.

U.S. Department of Agriculture, Natural Resources Conservation Service, 1961. Irrigation Land Leveling. Section 15, Chapter 12. National Engineering Handbook, Part 623.12. Washington, DC.